

REMARKS

Claims 1 through 20 are pending in this Application, of which claims 12 through 20 stand withdrawn from consideration pursuant to the provisions of 37 C.F.R. § 1.142(b). Accordingly, claims 1 through 11 are active. Applicants acknowledge, with appreciation, the Examiner's indication that claims 10 and 11 contain allowable subject matter. Accordingly, the only remaining issue pivots about the patentability of claims 1 through 8.

The specification has been amended to address apparent typographical oversights and claim 3 has been amended. Adequate descriptive support for the present Amendment should be apparent throughout the originally filed disclosure as, for example, paragraphs [11] and [17]. Applicants submit that the present Amendment does not generate any new matter issue.

Claim Objections.

The Examiner objected to claim 1 identifying an informality. In response, claim 1 has been amended by deleting the comma at the end of line 4, thereby overcoming the stated basis for the objection to claim 1. Accordingly, withdrawal of the objection to claim 1 is solicited.

Claim 3 was rejected under the second paragraph of 35 U.S.C. § 112.

In the statement of the rejection the Examiner pointed out that claim 3 does not specify to what layer the recited elements are added. This rejection is traversed.

In response, claim 3 has been amended to clarify that it is the magnetic alloy that further comprises at least one of the recited elements in amounts up to 10 at.%, thereby overcoming the stated basis for the imposed rejection. Accordingly, withdrawal of the rejection of claim 3 under the second paragraph of 35 U.S.C. § 112 is solicited.

Claims 1 through 9 were rejected under 35 U.S.C. § 103 for obviousness predicated upon Shimizu et al. in view of Ryonai et al.

In the statement of the rejection the Examiner asserted that Shimizu et al. disclose a **perpendicular** (but **not granular** as claimed) magnetic recording medium similar to that claimed, except that Shimizu et al. do not disclose the amount of titanium dioxide to be added to the magnetic layer. The Examiner then asserted that Ryonai et al. disclose a **granular** magnetic layer (but not a **perpendicular** as claimed), asserting that titanium oxide is added in an amount corresponding to that claimed. The Examiner concluded that one having ordinary skill in the art would have been motivated to modify the perpendicular (but not granular) magnetic recording medium disclosed by Shimizu et al. in view of the teaching of Ryonai et al. with respect to a granular (but not perpendicular) magnetic recording medium. The Examiner also relied upon on the optimization theory. This rejection is traversed.

Applicants submit that there are structural differences between the claimed magnetic recording medium and that disclosed by each of the applied references that undermine the obviousness conclusion under 35 U.S.C. §103. Applicants also submit that the requisite motivation for combining the applied references is lacking. Applicants further submit that the Examiner's reliance upon the theory of optimization is misplaced, because optimization for the purpose of Shimizu et al. has not been shown to coincide with optimization for the purpose of the claimed invention.

Factual Differences.

The Examiner's attention is invited to paragraph [09] of the present Application wherein Applicants disclose that there are basically **two** distinct classifications or types of perpendicular magnetic recording layers. The first type is one in which segregation of the grains occurs by diffusion of **chromium atoms** of the magnetic layer to the grain boundaries to form **chromium-rich grain boundaries**, which process requires significant heating of the media substrate. This is the type disclosed by Shimizu et al, as one having ordinary skill in the art would have clearly recognized as apparent from, for example, column 6 of Shimizu et al., lines 40 through 43. Indeed, Shimizu et al. require a high Cr content (12 to 26%) and a higher Cr content at the grain boundaries than within the grains. Moreover, Shimizu et al. do not even include additional oxides in the claims, thereby underscoring the fact that the disclosed media are **not granular**.

On the other hand, the second type of perpendicular magnetic recording media is one in which segregation of the grains occurs by formation of oxides and/or nitrides at the grain boundaries between adjacent magnetic grains to form the so-called "granular" media, and to which the present invention is directed. The Examiner must be aware of this difference because when the Examiner characterized Shimizu et al., the Examiner used only the expression "perpendicular magnetic recording medium", not granular. But when the Examiner characterized Ryonai et al., the Examiner used the expression "granular magnetic layer" (not even perpendicular).

One having ordinary skill in the art, interpreting the claimed invention in the **context** of the present disclosure, would have recognized that the claimed magnetic recording medium is of the second type, a **granular** magnetic recording medium, wherein segregation of the grains occurs by formation of oxides and/or nitrides at the boundaries between adjacent magnetic

grains; whereas, Shimizu et al., as apparently recognized by the Examiner, do not disclose a **granular** perpendicular magnetic recording medium. *Phillips v. AWH Corp.*, 415 F.3d 1303, 75 USPQ2d 1321 (Fed. Cir. 2005) (*en banc*). Therefore, as an initial matter, even **if** the perpendicular magnetic recording medium disclosed by Shimizu is modified as proposed by the Examiner, and Applicants do **not** agree that the requisite fact-based motivation has been established, the claimed invention comprising a **granular perpendicular** magnetic recording medium **would** not result. *Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 5 USPQ2d 1434 (Fed. Cir. 1988). This is because the apparently “also ran” disclosure of Shimizu et al. in column 6, lines 29 through 32, about another magnetic grain separating material, **does not convert** the disclosed magnetic recording medium wherein chromium separates the grains into a “granular” medium.

There is no motivation.

In order to establish the requisite motivation, the Examiner must make clear and particular factual findings as to a specific understanding or specific technological principle and then, based upon such facts, explain why one having ordinary skill in the art would have been realistically motivated to modify particular prior art, in this case the specific magnetic recording medium disclosed by Shimizu et al., to arrive at the claimed invention. *In re Lee*, 237 F.3d 1338, 61 USPQ2d 1430 (Fed. Cir. 2002); *Ecolochem Inc. v. Southern California Edison, Co.*, 227 F.3d 1361, 56 USPQ2d 1065 (Fed. Cir. 2000); *In re Kotzab*, 217 F.3d 1365, 55 USPQ 1313 (Fed. Cir. 2000); *In re Dembiczak*, 175 F.3d 994, 50 USPQ2d 1614 (Fed. Cir. 1999); *In re Rouffet*, 149 F.3d 1350, 47 USPQ2d 1453 (Fed. Cir. 1998). Further, the requisite motivation must be

undertaken with a reasonable expectation of success. *Velander v. Garner*, 348 F.3d 1359, 68 USPQ2d 1769 (Fed. Cir. 2003); *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

In applying the above legal tenets to the exigencies of this case, Applicants submit that the requisite motivational element has not been established. This is because, as the Examiner apparently realizes, each of the applied references relates to a **different type** of magnetic recording medium. As previously pointed out, Shimizu et al. relate to a **perpendicular** magnetic recording medium, **but not a granular type** to which the claimed invention is directed. It is not apparent wherein Ryonai et al. even disclose a **perpendicular** magnetic recording medium.

On the other hand, there are facts that support the determination that the recording medium disclosed by Ryonai et al. is **longitudinal**. For example, Ryonai et al. disclose the use of a chromium-dominant underlayer with moderate substrate heating, thereby indicating a longitudinal medium design in which the magnetic easy axis lies in a plane. Alternatively, if the substrate heating is too low, then a 3-dimensional isotropic orientation would occur, wherein the magnetic easy axis would be randomly distributed in all directions.

It is true that Ryonai et al. disclose separation of grains by various oxides and nitrides, inclusive of titanium oxide. However, when it comes to the **amount**, it is 5 to 12.5 at.% of the **metal** constituting the non-magnetic substance, not 5 to 12.5 at.% of the non-magnetic substance or titanium oxide. The Examiner did not discharge the initial burden of establishing that the amount disclosed by Ryonai et al. is even within the amount required by the claimed invention.

Moreover, as previously pointed out, magnetic separation of the perpendicular magnetic recording medium disclosed by Shimizu et al. is effected by **chromium**. Although oxides or nitrides can also be added, there is **no** apparent **factual basis** upon which to predicate the determination that the amount of oxide disclosed by Ryonai et al., which has yet to be

established as a matter of fact, is necessary in the medium disclosed by Shimizu et al., or even suitable, because grain separation is effected by **chromium**.

Assuming, as the Examiner has argued, that one having ordinary skill in the art would have been motivated to optimize the amount of oxide added to Shimizu et al., there is **no factual basis** upon which to predicate the determination that the **amount** required would be the amount used for a “granular” perpendicular magnetic recording medium vis-à-vis the magnetic recording medium actually disclosed by Shimizu et al. which contains **chromium** as the means for grain separation. Furthermore, as the Examiner has not factually established that Ryonai et al. are directed to a perpendicular magnetic recording medium, it would appear that the Examiner’s attempt to impress the amount of oxide employed by Ryonai et al. into Shimizu et al., particularly since Shimizu et al. employ chromium for separation, lacks the requisite expectation of success. *Velander v. Garner, supra; In re Vaeck, supra.*

Claim 3 and the claims dependent thereon.

Applicants separately argue the patentability of claim 3 and the claims dependent thereon, wherein the amount of chromium added is limited to 10 at.%. Clearly, Shimizu et al. envision the use of a magnetic alloy containing large amounts of chromium in order to effect grain separation. Indeed, according to column 6, lines 40 through 43, it appears that chromium concentration within the magnetic grains could be from 8 to 15 at.%, while the amount of chromium in the magnetic layer is 12 to 26 at.% (column 6, lines 19 and 20).

Moreover, claim 3 **precludes** substantial amounts of diffused chromium at the grain boundaries. However, Shimizu et al. **require** substantial amounts of chromium at the grain boundaries.

Based upon the foregoing Applicants submit that a *prima facie* basis to deny patentability to the claimed invention under 35 U.S.C. § 103 has not been established for lack of the requisite factual basis and want of the requisite realistic motivation. Applicants, therefore, submit that the imposed rejection of claims 1 through 9 under 35 U.S.C. § 103 for obviousness predicated upon Shimizu et al. in view of Ryonai et al. is not factually or legally viable and, hence, solicit withdrawal thereof.

Applicants again acknowledge, with appreciation, the Examiner's indication that claims 10 and 11 contain allowable subject matter. Based upon the arguments submitted *supra*, it should be apparent that the imposed objection and rejections have been overcome, and that all active claims are in condition for immediate allowance. Favorable consideration is, therefore, solicited.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

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Respectfully submitted,

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